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REMARKS

The drawings were objected to under 37 CFR 1.83(a) because, according to the Examiner, the limitation found in claim 9 is not shown in the drawing. Applicants respectfully traverse.

FIG. 2 depicts a backbone network 210 and a subtending network 220 that comprises a node that couples network 220 to network 210, as well as other nodes. The description of FIG. 2 clearly teaches that the node which couples network 220 to network 210 includes an unstacker 55. The output of unstacker 255 is a serial train of packets, each at a different wavelength, that is received by receiver 230 and is communicated to network 220. See the penultimate sentence of paragraph 53. This serial train of packets which flows through network 220 is communicated to the users coupled to subtending network 220 using, for example, WDM techniques. See the penultimate sentence of paragraph 8. Thus, it is respectfully submitted that the claim 9 limitation of

> dropped composite packet in said photonic time slot is further distributed to a plurality of user sites connected to said destination node by using Wavelength Division Multiplexing (WDM) techniques according to said constituent wavelengths of said composite packet

is depicted in the drawing and is also supported in the specification.

Claims, 1, 3, 6-7 and 12 were rejected under 35 USC 103 as being unpatentable over Tsushima et al, US Patent 5,600,466, in view of Sasayama et al, US Patent 5,493,434. Applicants respectfully traverse.

The Examiner asserts that Tsushima et al teach an optical ring network that includes nodes and those nodes include an optical crossbar switch., and that Sasayama et al teach the use of a tunable laser and that, therefore, claim 1 is obvious. Applicants respectfully disagree for a number of reasons.

First, even if what the Examiner asserts with respect to the teachings of Tsushima et al and Sasayama et al is correct, and even if there was some motivation for combining the two, (which there isn't) it would still remain that the combination does not have

> a wavelength stacker for stacking said plurality of serially generated packets to form a composite packet

and the Examiner has not asserted that either Sasayama et al or Tsushima et al have this element.[1]

As for the addition by the Examiner of the Sasayama et al reference for its teaching of a tunable laser, it is noted that the tunable laser shown in Sasayama et al's FIG. 18 relates to an embodiment where arriving information packages are modulated into "an arbitrary unused frequency channel" (col.12, lines12-13) and stored in one of a plurality of storage devices. Successive information package are not necessarily stored in a given device, and are not necessarily of different frequency channel. The whole storage regimen in the Sasayama et al system is ultimately controlled by the sequence of information packages that are extracted from the collection of the storage devices, because that controls the color slots that become available. It is also noted that this extraction is of one information package at a time. See col. 12, lines 23-25, which teach that

> The 1×2 frequency channel selector 17-7 selectively outputs the signals in the specific frequency channel specified by the control signals from the buffer control unit 17-9 from the last state buffer 17-6-R to the output highway 17-8, while keeping the signals of the other frequency channels in circulation at the last stage buffer 17-6-R.

Thus, though Sasayama et al describe a tunable laser, it is clear that they do not describe or suggest a stacker that creates a composite packet, as claim 1 specifies. Therefore, it is respectfully submitted that claim 1 is not obvious in view of the Tsushima et al and Sasayama et al combination of references.

Second, the Tsushima et al node does not create any information packets by the use of a laser; fixed or tunable, and there is no motivation for introducing into the Tsushima et al node a tunable laser like the one employed by Sasayama et al. Rather, to the extent information packets at a particular wavelength are created (that is, in the modulators 25), they use existing light and do not use a laser source.

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[1] Applicants hasten to add that, in connection with claim 3, the Examiner points to FIG. 8, stating that Tsushima et al teach "that the stacker also operates as an unstacker to recover and re-serialize the plurality of packets from the composite packet." Perhaps this is an implied assertion that FIG. 8 of Tsushima et al is a stacker, but the FIG. 8 embodiment does not have a crossbar switch, so it clearly does not apply to claim 1. A more detailed treatment of the Examiner's assertion is addressed below, in connection with claim 3.

Third, and partly in consequence of the above, there is absolutely no purpose to incorporate the tunable laser teaching of Sasayama et al because there is no need for a laser unless, of course, one wishes to modify the signaling beacon crated by laser 19 (see col. 6, lines 12-13).

Fourth, claim 1 specifies that the optical crossbar switch is connected to the optical ring network. In the Tsushima et al reference the *node* may be said to be connected to the network, but the crossbar switch (element 15) is **not** connected to the network. Numerous operationally significant elements are interposed between the network and either side of the switch; specifically, elements 13 and 14 at the input to the crossbar switch, and elements 20, 25, 48, and 26 at the output of the crossbar switch (not counting amplifiers 12 and 30, which from the standpoint of operational schema may be considered to be not significant).

It is noted that claim 1 is amended to make it comply with 35 USC 112, second paragraph[2] because in the course of reviewing the claim it was noted that the stacker is not coupled to any other element in the claim, and that makes the claim somewhat unclear. To correct this problem (and not in an effort to overcome the prior art rejection) claim 1 is amended to specify that the stacker is interposed between the tunable laser and the crossbar switch, through which the composite packet is able to be injected into the network. This clarification, interestingly, also presents a fifth reason for holding that the Tsushima et al reference combined with the Sasayama et al reference does not render claim 1 obvious, because nothing that is created in the Tsushima et al node – and certainly not a composite packet – is adapted to be injected into the network via the crossbar switch.

Thus, per force of each of the above reasons, it is respectfully submitted that claim 1 is not obvious in view of the Tsushima et al and Sasayama et al combination of references.

As indicated above in footnote 1, in connection with claim 3 the Examiner points to FIG. 8 of the reference. The embodiment depicted in FIG. 8 – which is an alternative to (rather than an augmentation of) the FIG. 2 embodiment – does not include a crossbar

[2] Although there is no outstanding 35 USC 112 rejection.

switch. That makes the FIG. 8 embodiment quite immaterial to the patentability of claim 1 and all claims that depend on claim 1 (including the subject claim 3). Additionally, applicants respectfully disagree with the Examiner's assertion that FIG. 8 teaches

> that the stacker also operates as an unstacker to recover and re-serialize the plurality of packets from the composite packet.

The input to the FIG. 8 arrangement is a time slot with a number of signals of different wavelengths. Those signals are demultiplexed in elements 13 and 14, and a small portion of the signals is extracted via couplers 20 (see col. 6 lines 13-18) and applied to switch 33. The output of the switch is applied to a receiver 21 and then to gate 22. Though there is a demultiplexing operation that takes place in the elements mentioned above, these elements doe not perform any unstacking operation to serialize, or re-serialize anything (and certainly no stacking operation).

Further, aside from the outputs of couplers 20 that are applied to switch 33, couplers 20 have outputs that are applied to modulators 25. One of these signals is modulated in that modulator to which switch 34 sends an information package that is stored in memory 23. The other modulators simply pass their input signal.

According to applicants' understanding, the signals that are applied by coupler 20 to the modulators contain a carrier of a given wavelength and possibly information. It is not clear why that optical signal would be applied to a modulator 25 and be modulated with the signal obtained from memory 23. The only explanation may be that the control is such that a modulator is selected by switch 34 which corresponds to a signal coming from a coupler 20 that is devoid if data. However, there is no teaching as to how such a signal is created, since there is no showing of dropping an entirety of a wavelength and an injection of a carrier that is devoid of data, so the operation of the FIG. 8 embodiment is not clear. What is perfectly clear, however, is that the demultiplexed data at the outputs of couplers 20 is applied, via modulators 25, to combiner 25, which basically is an N to 1 multiplexer. No stacking occurs, no conversion from a serial appearance of packets to a parallel arrangement that can be termed a "composite packet" occurs, and there is certainly no unstacking in connection with the operation of modulators 25 and combiner 26.

To sum up, the FIG. 8 embodiment does not have a stacker, does not have an unstacker, certainly does not have a stacker that also operates as an unstacker, there is no

serializing of any kind, there is certainly no re-serializing to offset the operation of the stacker, and there is no crossbar switch. Based on these distinctions and the arguments presented in connection with claim 1, applicants respectfully submit that dependent claim 3 is clearly not obvious in view of the Tsushima et al and Sasayama et al combination of references.

Claims 6 and 7 are deemed patentable at least by virtue of their limitations that are derived from claim 1.

Claim 12 specifies a system that includes an optical ring arrangement with nodes. At least one of the nodes, being a destination node of a composite packet that flows through the ring network, has a means for dropping the packet, means to create a new composite packet, and a means for adding the created composite packet to the ring. Additionally, the claimed system includes a means for routing the created composite packet that was injected into the ring network to another destination node of the ring network.

Applicants respectfully submit that Tsushima et al do not drop composite packets, do not create composite packets in a node, and do not add composite packets.

As for creating composite packets, no means for creating a composite packet is shown in the Tsushima et al reference, and there is no motivation for creating such a packet.

As for the dropping and adding of composite packets, it is respectfully submitted that Tsushima et al drop a fixed number of components from a collection of packets that appear at a given time slot, and add (at most) the same fixed number of components. To illustrate, in the FIG. 2b embodiment that number is fixed at 1 – with a single coupler 20 doing the dropping from the line designated "1" and a single modulator 25 doing the adding into the line designated "2." In the FIG. 7 embodiment that number is fixed at 2, with couples doing the dropping from lines designated "1" and "2" and modulators doing the adding into lines designated "3" and "4." It appears that dropping two signals is the limit in a system where the non-blocking switch outputs 4 lines. The FIG. 8 embodiment does have 4 couplers that could drop the entire set of packets (of different wavelengths) but switch 33 selects only one of the coupler outputs and, therefore, the FIG. 8 embodiment is functionally the same as the FIG. 2b embodiment. Thus, Tsushima et al

do not drop or add composite packets. As for the Sasayama et al reference, which is cited for its teaching of a tunable laser, it is respectfully submitted that this reference immaterial to claim 12 because claim 12 does not specify a tunable laser. Hence, it is respectfully submitted that claim 12 is not obvious in view of Tsushima et al in combination with Sasayama et al.

Claims 2 and 13 were rejected under 35 USC 103 as being unpatentable over Tsushima et al in view of Sasayama et al and further in view of Mizrahi et al, US Patent 5,748,349.

Claim 2 specifies the structure of the stacker and also specifies some of the elements within the stacker. Alas, in reviewing the claim it was determined that in the phrase "cascaded and equally spaced" is unclear as to what "equally spaced" means or what it relates to. To correct this problem, claim 2 is amended herein.

In support of the rejection the Examiner asserts that "incorporating optical circulators with Bragg grating to pass or prevent specific channels is well known in the art." Further in support of the rejection the Examiner cites the Mizrahi et al reference. Applicants respectfully traverse.

If the issue were whether the art knows that in order to pass, or prevent, specific channels one may use optical circulators and Bragg grating, then the Mizrahi et al reference would be right on point. But that is not the issue. The issue is how to create a stacker, and relative to this issue the Mizrahi et al reference is silent. It does not suggest a the solution to **this task**, and ipso facto it does not suggest that the solutions lies with optical circulators and Bragg gratings. Moreover, even if the use of a plurality of optical circulators and a plurality of FBGs were suggested by Mizrahi et al for the purpose of creating a stacker, applicants note that claim 2 specifies a very particular interconnection, where the FBGs are

> connected to and sandwiched between said plurality of optical circulators, wherein said plurality of FBGs are serially interconnected in a manner that imparts a preset signal flow delay between adjacent FBGs, and the serial interconnection interposed between said pair of optical circulators

Nothing in Mizrahi et al provides even a hint of such an arrangement, and certainly not FIG. 1 (cited by the Examiner) which is an add/drop arrangement, and not a stacker, or

unstacker. Consequently, it is believed that amended claim 2 is not obvious in view the combination of Tsushima et al, Sasayama et al and Mizrahi et al.

Applicants respectfully submit that applying a similar argument leads to the conclusion that claim 13 is also not obvious in view the combination of Tsushima et al, Sasayama et al and Mizrahi et al.

Claims 4, 5 and 8 were rejected under 35 USC 103 as being unpatentable over Tsushima et al in view of Sasayama et al and further in view of Chlamtac et al, "Scalable WDM Access Network Architecture Based on Photonic Slot Routing," *IEEE/ACM Transactions on Networking*, col. 7, No. 1, February 1999, pages 1-9. Applicants respectfully submit that the Chlamtac et al reference does not supply the limitations of claim 1 that make the claim allowable and, therefore, claims 4, 5, and 8 are not obvious in view of the Tsushima et al, Sasayama et al, and Chlamtac et al combination of references.

Claim 9 was rejected under 35 USC 103 as being unpatentable over Tsushima et al in view of Sasayama et al, the aforementioned Chlamtac et al article, and Mesh US Patent 6,256,431. Applicant respectfully traverses. The Examiner asserts that it would be obvious to distribute to user sites connected to the destination node by using WDM techniques, and in support of this assertion the Examiner cites the Mesh reference for its teachings of WDM distribution of signals. Respectfully, the issue is not whether WDM can be used to distribute signals but, rather, whether in the context of an arrangement where a backbone network that employs a node where a composite packet is dropped and unstacked to form a serialized set of packets it would be obvious to use WDM techniques. Relative to this issue, the Mesh reference is totally silent. Given that signals could have easily been distributed using TDM (rather than WDM) techniques, or the information carried by packets of different wavelengths could have been detected first and then distributed in any number of different ways, there is nothing in any of the references that suggests the advisability of using WDM techniques. Therefore, it is respectfully submitted that claim 9 is not obvious in view of the Tsushima et al, Sasayama et al, Chlamtac et al, and Mesh combination of references.

Claim 10 was rejected under rejected under 35 USC 103 as being unpatentable over Tsushima et al in view of Sasayama et al, the aforementioned Chlamtac et al article,

and Adams US Patent 6,748,175. Applicants respectfully traverse and submit that the Examiner's reasoning, again, is focused on a technique, and does not demonstrate that in the context of the system claimed in the independent claim the parallel detection of composite packets is somehow suggested by any of the references, including the Adams reference. Applicants respectfully submit that claim 12 is not obvious in view of the Tsushima et al, Sasayama et al, Chlamtac et al, and Adams combination of references.

In light of the above amendments and remarks applicants respectfully submit that all of the Examiner's objections and rejections have been overcome. Reconsideration and allowance are respectfully solicited.

Respectfully,
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